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GARRETT RANKING ANALYSIS FOR CONSTRAINTS FACED BY DAIRY FARMERS IN MAHARASHTRA, INDIA

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ABSTRACT

Dairy co-operatives are now one of the most professionally managed industries in the Indian economy as a result of the Operation Flood Program's. The Dairy farming play very important role in improving the income of the farmers. Inspite of income to dairy farmers, they are facing many challenges while doing the business of dairy farming. The present study was undertaken in order to understand the constraints faced by dairy farmers. Garrett's ranking technique was used to rank the dairy farmers preference for different problems faced. It is based on primary data collected from 100 farmers from the four districts of Maharashtra. Out of 100 dairy farmers contacted, the study revealed that the 1st rank to the financial loss to the farmer because of no proper functioning of dairy co-operatives, 2nd rank to the less price of milk, 3rd rank to the high cost of feed fodder, labour and fees of veterinary doctor, 4th rank to the seasonal fluctuations in milk production or less production of milk in whole year, 5th rank to the not getting payment on time, 6th rank to the in case of problems in getting loan for dairy and no proper insurance facilities, 7th rank to the lack of breeding facilities and vaccination on time, 8th rank to the lack of source of feed, fodder, labour and Veterinary doctor, 9th rank to the in case of low quality of milk and less customer satisfaction and 10th rank to the lack of transportation facilities and inadequate space available. By the study, it was noticed that the least consider constraint was at first rank that is financial loss to the farmer because of no proper functioning of dairy. There is need to create awareness regarding this and proper action on that will be beneficial to the farmer. Also need to study of economics of dairy farming, which helps the farmer at the level of cost of inputs and also prices of milk to get worthy net income to the dairy farmer.

Key words : Operation flood, Dairy farming, Dairy co-operative, Constraints, Preference, Primary data, Garrett ranking.

Introduction

The dairy co-operative movement in India has witnessed remarkable growth and success over the years, with the introduction of the white revolution, led by Verghese Kurien and the establishment of AMUL brand. Dairy cooperatives are now one of the most professionally managed industries in the Indian economy as a result of the Operation Flood Program's contribution to the socio-economic development of rural milk producers and the establishment of an effective partnership between farmers and professionals in the dairy industries. India's milk availability increased from 291 grammes per day in 2010–11 to 137.7 grammes per day in 2013–14 and 459 grammes in 2023. An increase of 4% in milk production. (Source: Annual Report 2023-24, Department of Animal Husbandry, Dairy and Fisheries, Ministry of Agriculture, GOI, New Delhi.). Due to the entry of the private sector and multinational corporations, dairy cooperatives are well ahead of the competition, which is seen in a minor way. With a share of more than 10.11% in India's total milk production, Maharashtra is the state with the greatest milk production at 14,300 thousand tonnes (2023). In addition to producing the most milk, Maharashtra has the most cows and buffaloes, with 90,18,000 numbers in 2019. (Source: Livestock census MoFAHD,DAHD, GOI 2019) The dairy industry's greatest strength is how labor-intensive it is, with cost effectiveness coming in second. Over time, dairy cooperatives have successfully boosted

the self- confidence of farmers who have been active in the industry. Despite the successs stories of farmers many dairy farmers face financial challenges. In Maharashtra, total number of dairy cooperatives: As of April 2022, there were 76 dairy co-operatives in Maharashtra. (Source: Dairy Development Department, Maharashtra).

There have been no adequate studies conducted in the state of Maharashtra to generate data about the constraints perceived by the dairy farmers, which deals with livestock rearing as a sole source of their livelihood. Keeping these factors in mind, the present investigation was planned to identify the constraints perceived by framers in Pune, Sangli, Solapur and Ahilyanagar districts with the objective to identify and ranking the most significant constraints.

To identify the problems faced by dairy farmers and use of Garrett ranking method to give ranking to constraints.

Materials and Methods

The present study was conducted in the Sangali, Solapur, Ahilyanagar and Pune districts of Maharashtra. For each district twenty-five dairy farmers were selected. Thus, a sample of 100 dairy farmers was selected purposively which covers south, north, east and central part of Maharashtra. The primary data was collected through personal interview method with the help of structured Schedule, specially designed for the study. Collected data were classified, tabulated and analyzed by using statistical methods like Garrett ranking analysis to rank the constraints.

The information regarding constraints was collected through personal interview method. Garrett ranking technique was used to analyses the constraints. Garrett's Ranking Technique provides the change of orders of constraints and advantages into numerical scores. The prime advantage of this technique over simple frequency distribution is that the constraints are arranged based on their severity from the point of view of respondents (Zalkuwi *et al*, 2015). Hence, the same number of respondents on two or more constraints may have been given different rank. Garrett's formula for converting ranks into percent is as below:

Percent position = 100(Rji-0.5)/Nj

Rji = 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th Ranks

Nj = Total rank given by 100 respondents = 10

The per cent position of each rank was converted into scores referring to the table given by Garrett and Woodworth (1969). For each factor, the scores of individual respondents were added together and divided by the total number of the respondents for whom scores was added. These mean scores for all the constraints were arranged in high to lower order and accordingly rank were allotted to the constraints.

Results and Discussion

Table 1 observed that, the dairy farmers faced many constraints during dairy business. The factor numbers were given from F_1 to F_{10} to major ten constraints identified as per dairy farmers and research point of view.

Table 2 provides comprehensive review of count of how many respondents have given 1st to 10 th rank for each factor. We have 10 factors in research and we asked the respondent to rank each factor based on the severity, means most savior constraint gave 1st rank and least savior constraint gave 10th rank and medium rank as per their severity.

Table 3 indicates that the percent position for each factor.

Calculate percent position = 100(Rji-0.5)/Nj

Rji = 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th Ranks

Nj = Total rank given by 100 respondents = 10

As per Table 3, the first factor having 5 percent position, second factor having 15 percent position and so on upto tenth factor having 95 percent position.

Table 1 : Factor Numbers as per constraints faced by the farmer before Garrett Ranking analysis.

Factor no.	Factors
F_1	Lack of source of feed, fodder, labour and Veterinary doctor.
F_2	High cost of feed fodder, labour and fees of veterinary doctor.
F_3	Lack of breeding facilities and vaccination on time.
F_4	Less Price of Milk.
F_5	Not getting payment on time.
F_6	Lack of transportation facilities and inadequate space available
F_7	In case of problems in getting loan for dairy and proper insurance facilities.
F_8	In case of low quality of milk and less customer satisfaction.
F_9	Seasonal fluctuations in milk production/Less production of milk in whole year.
F_{10}	Financial loss to the farmer because of no proper functioning of dairy co-operatives.

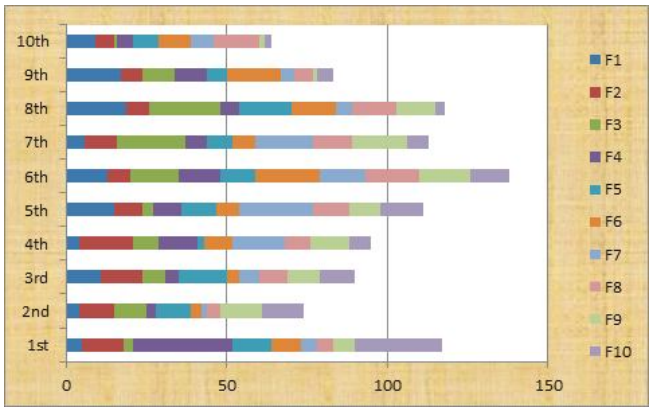

Fig. 1 : Respondent (N=100) ranking to each factor.

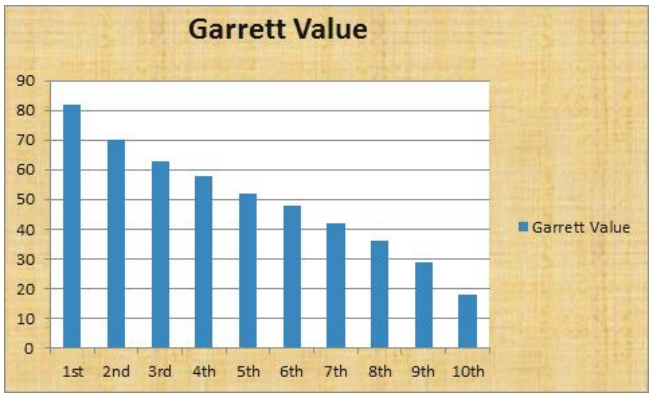

Fig. 2 : Garrett values as per Garrett Ranking conversion table.

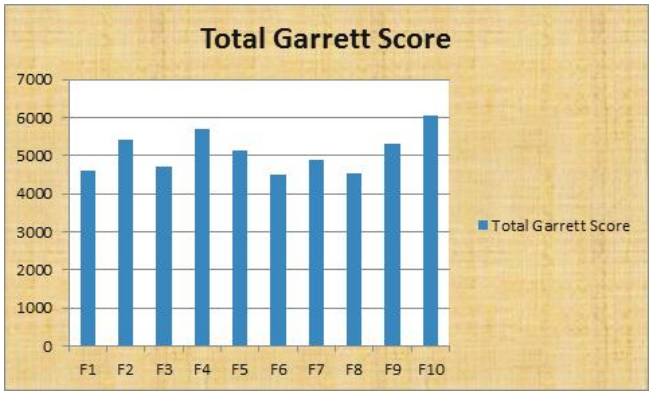

Fig. 3 : Total Garrett Score for each factor.

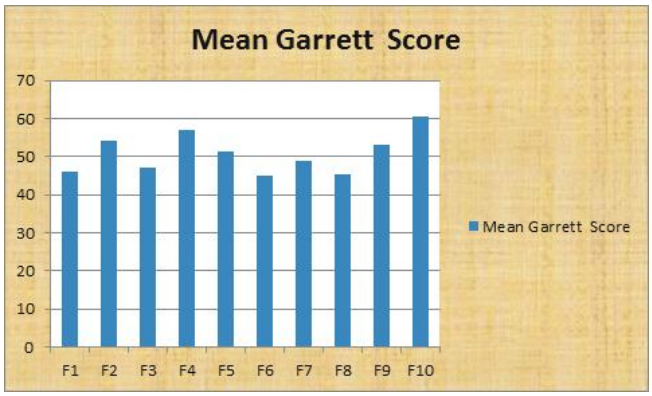

Fig. 4 : Mean Garrett Score for each factor.

Table 4 depicts the Garrett Value for each percent position, calculated as per Henry Garrett ranking conversion table. So, for first factor who having 5 percent position, the Garrett value was 82. For second factor who having 15 percent position, the Garrett value was 70 and so on upto tenth factor having 95 percent position the Garrett value was 18.

Table 5 depicts the final Garrett value which was calculated by multiplying each rank with Garrett value. So 1st rank count for each factor was multiplied by their Garrett value 82. So, it was (5*82 = 410) and so on.

Table 6 depicts the total Garrett Score for each factor. The total Garrett score for first factor was 4610, for second factor Garrett Score was 5428 and so on upto tenth factor was 6058.

Table 7 depicts the mean Garrett score for total Garrett Score. In which each total score divide by the total number of respondents in this case 100 respondents. For the first factor mean score was 46.10, for second factor mean score was 54.28 and so on upto tenth factor which mean score was 60.58.

Table 8 depicts the 1st to 10th ranking to the factor as per Garrett ranking analysis. The highest mean score was given first rank and so on. As per above table the

Table 2 : Count of how many respondents have given 1st to 10th rank for each factor.

Factors	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
F_1	5	4	11	4	15	13	6	19	17	9
F_2	13	11	13	17	9	7	10	7	7	6
F_3	3	10	7	8	3	15	21	22	10	1
F_4	31	3	4	12	9	13	7	6	10	5
F_5	12	11	15	2	11	11	8	16	6	8
F_6	9	3	4	9	7	20	7	14	17	10
F_7	5	2	6	16	23	14	18	5	4	7
F_8	5	4	9	8	11	17	12	14	6	14
F_9	7	13	10	12	10	16	17	12	1	2
F_{10}	27	13	11	7	13	12	7	3	5	2

Table 3 : Percent position calculation.

Rank	100(Rji-0.5)/Nj	Percent Position
1	100(1-0.5)/10	5
2	100(2-0.5)/10	15
3	100(3-0.5)/10	25
4	100(4-0.5)/10	35
5	100(5-0.5)/10	45
6	100(6-0.5)/10	55
7	100(7-0.5)/10	65
8	100(8-0.5)/10	75
9	100(9-0.5)/10	85
10	100(10-0.5)/10	95

Table 4 : Garrett Value calculation.

Rank	Percent Position value	Garrett value
1	5	82
2	15	70
3	25	63
4	35	58
5	45	52
6	55	48
7	65	42
8	75	36
9	85	29
10	95	18

Table 5 : Each rank multiply by Garrett value.

Factors	1st*82	2nd*70	3rd*63	4th*58	5th*52	6th*48	7th*42	8th*36	9th*29	10th*18
F_1	410	280	693	232	780	624	252	684	493	162
F_2	1066	770	819	986	468	336	420	252	203	108
F_3	246	700	441	464	156	720	882	792	290	18
F_4	2542	210	252	696	468	624	294	216	290	90
F_5	984	770	945	116	572	528	336	576	174	144
F_6	738	210	252	522	364	960	294	504	493	180
F_7	410	140	378	928	1196	672	756	180	116	126
F_8	410	280	567	464	572	816	504	504	174	252
F_9	574	910	630	696	520	768	714	432	29	36
F_{10}	2214	910	693	406	676	576	294	108	145	36

Table 6 : Total Garrett score.

Factors	1st*82	2nd*70	3rd*63	4th*58	5th*52	6th*48	7th*42	8th*36	9th*29	10th*18	Total
F_1	410	280	693	232	780	624	252	684	493	162	**4610**
F_2	1066	770	819	986	468	336	420	252	203	108	**5428**
F_3	246	700	441	464	156	720	882	792	290	18	**4709**
F_4	2542	210	252	696	468	624	294	216	290	90	**5682**
F_5	984	770	945	116	572	528	336	576	174	144	**5145**
F_6	738	210	252	522	364	960	294	504	493	180	**4517**
F_7	410	140	378	928	1196	672	756	180	116	126	**4902**
F_8	410	280	567	464	572	816	504	504	174	252	**4543**
F_9	574	910	630	696	520	768	714	432	29	36	**5309**
F_{10}	2214	910	693	406	676	576	294	108	145	36	**6058**

first rank to the F_{10} factor number that is, the financial loss to the farmer because of no proper functioning of dairy co-operatives, second rank to the F4 factor number that is, the less Price of Milk as like Rathod *et al.* (2009), Jaya Varathan *et al*. (2012), Michael *et al.* (2012), Subhadra *et al.* (2009), Shisode *et al*. (2009), Mohapatra *et al*. (2012) reported low price of milk as major constraint, third rank to the F_2 factor number that is, the high cost of feed fodder, labour and fees of veterinary doctor as like Rathod *et al*. (2009), Jaya Varathan *et al*. (2012), Michael *et al.* (2012), Subhadra *et al.* (2009) Shisode *et al*. (2009), Mohapatra *et al*. (2012) reported high cost of feed fodder as third rank constraint .Fourth rank to the F_9 factor number that is, the seasonal fluctuations in milk production or less production of milk in whole year, fifth rank to the F_5 factor number that is, the not getting payment on time, sixth rank to the F_7 factor number that is, the in case of problems in getting loan for dairy and proper insurance facilities, seventh rank to the F_3 factor number that is, the lack of breeding facilities and vaccination on time, eighth rank to the F_1 factor number that is, the lack of source of feed, fodder, labour

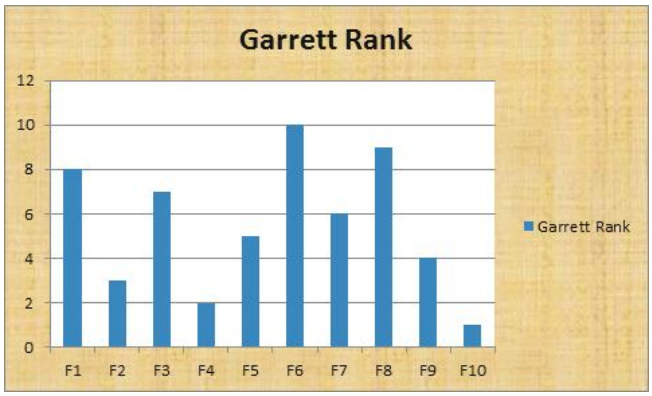

Fig. 5 : Garrett Rank for each factor.

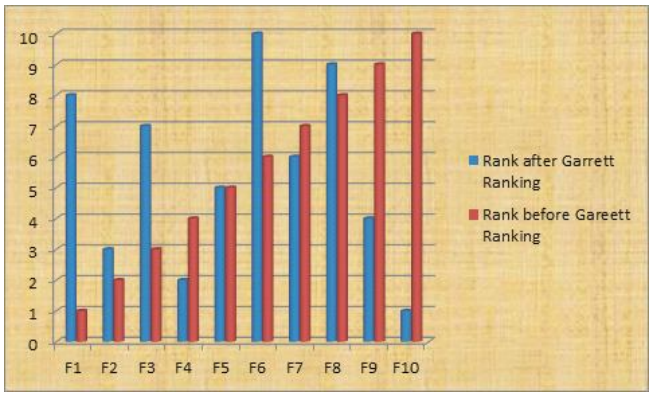

Fig. 6 : Comparative Graph of Ranking to constraint faced by dairy farmer before and after Garrett Ranking analysis.

Table 7 : Mean Garrett Score.

Factors	Total Garrett Score	Mean Garrett Score
F_1	4610	4610/100 = 46.10
F_2	5428	5428/100 = 54.28
F_3	4709	4709/100 = 47.09
F_4	5682	5682/100 = 56.82
F_5	5145	5145/100 = 51.45
F_6	4517	4517/100 = 45.17
F_7	4902	4902/100 = 49.02
F_8	4543	4543/100 = 45.43
F_9	5309	5309/100 = 53.09
F_{10}	6058	6058/100 = 60.58

Table 8 : Garrett Rank.

Factors	Total Score	Mean Score	Rank
F_1	4610	4610/100=46.10	**8**
F_2	5428	5428/100=54.28	**3**
F_3	4709	4709/100=47.09	**7**
F_4	5682	5682/100=56.82	**2**
F_5	5145	5145/100=51.45	**5**
F_6	4517	4517/100=45.17	**10**
F_7	4902	4902/100=49.02	**6**
F_8	4543	4543/100=45.43	**9**
F_9	5309	5309/100=53.09	**4**
F_{10}	6058	6058/100=60.58	**1**

Table 9 : Comparative graph of Ranking to constraint faced by dairy farmers before and after Garrett Ranking analysis.

Factors	Ranking before Garrett ranking	Factors	Ranking after Garrett ranking
F_1	1	Lack of source of feed, fodder, labour and Veterinary doctor.	8
F_2	2	High cost of feed fodder, labour and fees of veterinary doctor.	3
F_3	3	Lack of breeding facilities and vaccination on time.	7
F_4	4	Less Price of Milk.	2
F_5	5	Not getting payment on time.	5
F_6	6	Lack of transportation facilities and inadequate space available	10
F_7	7	In case of problems in getting loan for dairy and proper insurance facilities.	6
F_8	8	In case of low quality of milk and less customer satisfaction.	9
F_9	9	Seasonal fluctuations in milk production/Less production of milk in whole year.	4
F_{10}	10	Financial loss to the farmer because of no proper functioning of dairy co-operatives.	1

and Veterinary doctor, ninth rank to the F_8 factor number that is, the in case of low quality of milk and less customer satisfaction and last tenth rank to the F_6 factor number that is, the lack of transportation facilities and inadequate space available.

Table 9 depicts the comparative 1st to 10th ranking to the factor before and after Garret ranking analysis. Factor F_1, which was at first rank before analysis, it was at 8th rank after Garrett ranking analysis. Factor F_2, which was at second rank before analysis, it was at 3rd rank after

Garrett ranking analysis. Factor F_3, which was at third rank before analysis, it was at 7th rank after Garrett ranking analysis. Factor F_4, which was at fourth rank before analysis, it was at 2nd rank after Garrett ranking analysis. Factor F_5 which was at fifth rank before analysis, it was at 5th rank after Garrett ranking analysis. Factor F_6 which was at sixth rank before analysis, it was at 10th rank after Garrett ranking analysis. Factor F_7 which was at seventh rank before analysis, it was at 6th rank after Garrett ranking analysis. Factor F_8 which was at eighth rank before analysis, it was at 9th rank after Garrett ranking analysis. Factor F_9 which was at ninth rank before analysis, it was at 4th rank after Garrett ranking analysis. Factor F_{10} which was at tenth rank before analysis, it was at 1st rank after Garrett ranking analysis.

Conclusion

Dairying is not a layman's business and it has a lot of constraints to make it worthy. With present findings it can be concluded that, farmer not only facing problem at production or price level but also because of no proper functioning of dairy co-operatives. By the study, it was noticed that the least consider constraint was at first rank that is financial loss to the farmer because of no proper functioning of dairy. There is need to create awareness regarding this and proper action on that will be beneficial to the farmer. Also need to study of economics of dairy farming which helps the farmer at the level of cost of inputs and also prices of milk to get worthy net income to the dairy farmer.

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